

CLAIMS

What I claim is:

1. A vehicle night vision camera comprising:
an optical lens for receiving an image;
a low light CCD image sensor array which converts the received image into an electronic signal;
5 a signal processor which receives the electronic signal and is capable of automatically controlling a gain of the electronic signal;
a timing controller which is capable of automatically controlling an electronic iris size of the CCD image sensor array;
a display which converts the electronic signal into a image on the display; and
10 at least one luminance threshold detector which determines the luminance of the electronic signal and generates a luminance threshold detector output signal for enabling or disabling the automatic gain control of the electronic signal and the automatic electronic iris size of the CCD image sensor array.
2. The vehicle night vision system of claim 1 wherein the at least one luminance threshold detector detects the luminance at the upper portion of the image.
3. The vehicle night vision system of claim 2 wherein the luminance threshold detector detects the luminance of approximately the top ten scan lines of the image.
4. The vehicle night vision system of claim 1 wherein the automatic gain control and iris control is determined by detecting the luminance at the center of the image.
5. The vehicle night vision system of claim 1 wherein the luminance threshold detector output signal controls an analog switch for alternatively electrically completing an automatic gain feedback loop of the signal processor or electrically connecting an automatic gain control reference signal to the signal processor.

6. The vehicle night vision system of claim 5 wherein the automatic gain control reference signal is manually variable by the driver of the vehicle.

7. The vehicle night vision system of claim 1 wherein the luminance threshold detector output signal controls an analog switch for alternatively electrically completing an iris control signal from the signal processor to the timing controller or electrically connecting an iris control reference signal to the timing controller.

8. The vehicle night vision system of claim 7 wherein the iris control reference signal is manually variable by the driver of the vehicle.

9. A method of controlling a night vision system for a vehicle comprising the steps of:

projecting an image through a lens onto a low light CCD image sensor array;

5 converting the image into an electronic signal with the low light CCD image sensor array;

detecting the luminance of the image;

automatically controlling the gain of the electronic signal when the luminance of the image is beyond a threshold level;

10 setting the gain to maximum when the luminance of the image is below the threshold level;

automatically controlling the electronic iris of the CCD image sensor array when the luminance of the image is above the threshold level; and

setting the iris size to maximum when the luminance of the image is below the threshold level.

10. The method of claim 9 wherein the step of detecting the luminance of the image comprises detecting the luminance of the upper portion of the image.

11. The method of claim 10 wherein the step of detecting the luminance of the upper portion of the image comprises detecting the luminance at approximately the uppermost ten scan lines of the image.

12. The method of claim 9 wherein the step of automatically controlling the gain of the electronic signal when the luminance of the image is beyond a threshold level comprises automatically controlling the gain of the electronic signal when the luminance of a center area of the image is beyond a threshold level

13. A system for controlling a night vision system for a vehicle comprising:
means for projecting an image through a lens onto a low light CCD image sensor array;

5 means for converting the image into an electronic signal with the low light CCD image sensor array;

means for detecting the luminance of the image;

means for automatically controlling the gain of the electronic signal when the luminance of the image is beyond a threshold level;

10 means for setting the gain to maximum when the luminance of the image is below the threshold level;

means for automatically controlling the electronic iris of the CCD image sensor array when the luminance of the image is beyond the threshold level; and

means for setting the iris size to maximum when the luminance of the image is below the threshold level.

14. The system of claim 13 wherein the means for detecting the luminance of the image comprises means for detecting the luminance of the upper portion of the image.

15. The method of claim 14 wherein the means for detecting the luminance of the upper portion of the image comprises means for detecting the luminance at approximately the uppermost ten scan lines of the image.

16. The method of claim 13 wherein the step of automatically controlling the gain of the electronic signal when the luminance of the image is beyond a threshold level comprises automatically controlling the gain of the electronic signal when the luminance of a center area of the image is beyond a threshold level

17. A night vision camera for a vehicle comprising:
a camera portion;
a camera portion securement for attaching the camera portion to the windshield of an automobile;
5 a display portion;
a display portion securement for attaching the display portion to the windshield of an automobile.

18. The night vision system of claim 17 wherein the camera portion securement and the display portion securement each comprises a ball and socket device.

19. The night vision system of claim 18 wherein the ball and socket device are attached to the windshield with an adhesive.

20. The night vision system of claim 18 wherein the camera portion and the display portion are assembled in a single case and the camera portion securement and the display portion securement comprise a single securement.

21. A night vision system for a vehicle comprising:
a camera portion;
a camera portion mounted within the interior of the vehicle;
a display portion;
5 a display portion securement for attaching the display portion to the windshield of an automobile.